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DR. L. BAUMAN, formerly assistant professor of medicine and director of research, at the University of Iowa has been appointed associate in medicine at Columbia University and assistant visiting physician to the Presbyterian Hospital.

THE following appointments to professorships in the University College of Wales, Aberystwyth, have been made: Professor G. Owen, of the University of New Zealand, in physics; Professor W. H. Young, of the University of Liverpool, in mathematics; A. E. Jones, of the University of Wales, in agriculture; Captain W. T. Pugh, in geology.

#### DISCUSSION AND CORRESPONDENCE A POSSIBLE SOURCE OF COSMICAL ENERGY

ACCORDING to the theory of J. J. Thomson, atoms are complex structures of systems of positively and negatively charged particles (such as, *e. g.*, helium nuclei and electrons) in rapid rotation and held in position by an equilibrium of their mutual forces.

Various phenomena can be explained and a possible source of cosmical energy be found by the simple assumption that some constituents of the subatomic structure retard their speed in eons and thereby increase the weight of the atoms.

It was recently pointed out<sup>1</sup> that the different atomic weights of the isotopes, such as, *e. g.*, the different forms of lead, may be due to "age" of the chemical elements, whereby the different types of atoms are subject to a chemical evolution. In the case of lead the radioactive or young lead possesses the lower atomic weight and density than the common or old lead. According to this hypothesis the radioactive, that is newly formed, lead will eons hence have a higher atomic weight and density, while the common or old lead had eons ago a lower atomic weight and density. All other elements should be subject to this aging process, and by the catching of further electrons and helium nuclei transmute into elements of higher atomic weight. Evidence of this is seen in the occurrence of the chem-

ical elements and their distribution upon the earth's surface, where elements of the same period are mostly aggregated in definite mineral types.

Assuming that the orbital motion of the electrons is lessened in a certain time interval, it is evident that a steady and continuous amount of energy apparently disappears. This energy perhaps reappears as cosmical energy, for the principle of conservation makes it inconceivable that such a steady drainage of energy should be constantly wasted.

If such a theory is substantiated, a link between the extreme sciences of the macrocosmos and microcosmos, astrophysics and subatomic physics, will be established and stellar evolution will be based upon a chemical evolution whereby all types of atoms change until they finally become radioactive, that is unstable, and disintegrate again. The smoke-rings of some planetaries are then perhaps clouds of helium gas formed by the radioactive disintegration of the nuclear star, and would thus indicate the last stage of chemical and stellar evolution and the beginning of a new series.

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#### THE IMPERFECT STAGE OF *LEPTOSPHERIA TRITICI* OF WHEAT

IN connection with studies of anthracnose of small grains a species of what seemed to be an *Ascochyta* has frequently been found on dead straw. Recently, while culturing *Leptosphaeria tritici* the relationship of these two forms was revealed.

The pycnidial fruiting bodies grow side by side with the perithecia of *L. tritici* on dead wheat straw in the spring and are difficult to distinguish from them, both being dark, submerged and of the same size, though the ostioles of the perithecia are more protruding. The pycnidia are filled with guttulate spores, usually two-celled and approximately 12–20  $\times$  3.5–4  $\mu$ , their shape, size and manner of production suggesting *Ascochyta graminicola* as described by Frank. Single spore cultures of the ascospores of *L. tritici* obtained by the

<sup>1</sup> SCIENCE, 49, 328, 1919.